In The Matter Of:

CLEAN ENERGY MASTER PLAN STAKEHOLDERS

September 14, 2018

JH Buehrer & Associates

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2019 ENERGY MASTER PLAN

REDUCING ENERGY CONSUMPTION
STAKEHOLDERS MEETING

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DATE: SEPTEMBER 14, 2018

TIME: 10:00 A.M.

PLACE: STATE HOUSE ANNEX
CONFERENCE ROOM 6
131 - 137 West State Street
Trenton, New Jersey 08625

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A P P E A R A N C E S:

MS. GRACE STROM POWER: Good morning, everybody. On behalf of Governor Murphy and BPU President Fiordaliso, I'd like to welcome you all here today to our second public stakeholder meeting of the Energy Master Plan.

As many of you know, on May 23rd Governor Murphy signed a new piece of legislation, and on the same day Executive Order 28, which charges the BPU to spearhead the Energy Master Plan committee that will ultimately develop and deliver the Energy Master Plan by June 1st, 2019.

Our committee is tasked with developing a blueprint for the total conversion of the state's energy production profile to 100 percent clean energy by January 1, 2050.

This 2019 EMP will set a strategic vision for the state's role as a leader in the 21st century energy economy over the next decade and set New Jersey on a path toward 100 percent clean energy.

I want to briefly go over with you the outline we have put together for the

Energy Master Plan. In June, we kicked off the interagency to-do list and we held our first stakeholder meeting in September. This winter we are going to be working to complete our first draft that will be released at the end of winter/early spring, at which time it will be released for public comment. We will have many additional opportunities for you all to read it, to comment. We will have public hearings throughout the state to ensure that we capture the entire geography of the state. And ultimately in June of next year, we will deliver a final plan to the governor.

As I mentioned, the Energy Master Plan committee is comprised of a number of state departments, who all have a critical role in developing this plan. In addition to staff on the Board of Public Utilities, we have DCA, EDA, DEP, Health, Human Services, Transportation, Labor and Workforce Development, Treasury, and Transit. And, of course, we are working hand-in-hand with the governor's office to

put this together.

As I mentioned, we have five stakeholder working groups. Today is Reducing Energy Consumption, and I'm going to turn it over to our lead, Sara Bluhm, who is the BPU's Business Ombudsman.

MS. SARA BLUHM: Thank you, Grace, and thank you everyone for joining us today. We like to refer to ourselves as Team Kilowatt, and I'm very happy to have many of our teammates here today. I'd like to just quickly have them introduce themselves and identify their department so that you can see we do have multi-agency representation here.

Let's start at the end with our friends from the EDA. And we are in the State House, so red means go.

MS. NOLAN: Liza Nolan, EDA.

MR. WISNIEWSKI: Rob Wisniewski, EDA.

MR. WALKER: Tom Walker, BPU.

MS. BRAND: Hi, I'm Jessica Brand, I work with the BPU.

MS. JONES: Sherri Jones, BPU.

MR. GOLUBINSKI: Bill Golubinski, Treasury DPM.

MS. TEMBE: Sheryl Tembe, DEP.

MR. WONG: Danny Wong, DEP.

MR. AUSTIN: Rob Austin, New Jersey DCA, Codes and Standards.

MS. BLUHM: Great. Thank you. And so you're aware, we do have other upcoming meetings, too, but for today's meeting, we appreciate you all being here.

As you can see, we have had over a hundred people sign up, and we have set up today's meeting so that folks who signed up to speak and submitted comments will be in our first tier of speakers, after that will be folks who signed up in advance to speak, and then our third tier will be people who indicated today that they would like to speak.

We recognize you don't all want to speak, but in the interest of making sure that we can hear everyone's comments, we are going to have a 10-minute speaker limit, and we hope that you can all work within that today so that we can hear

everybody.

And if you haven't been able to capture all of your comments within that 10 minutes, we are more than happy to hear you again. But we are going to let everybody go through with their first 10 minutes, and then if people need to come back up again, then they can have a second 10 minutes. And so that's how we're going to be operating in terms of speakers. I will be going through a speakers list and letting you know who is up and who is on deck. And we appreciate your cooperation today as we walk through this. We're very excited to hear your comments and your feedback as we're working through this deliberative process.

But for those of you who are planning on attending our other meetings, just a programming note, hopefully you received the e-mail update, but next Thursday's Transportation Committee has been moved as well. It will be in the State House, but it will be in committee room 4, which is also on this floor. It

was previously scheduled for the College of New Jersey. But just wanted to make sure everyone's aware that next Thursday's Transportation meeting will also be at the State House, and all meetings begin at 10:00. We also have our Modernizing Grid on September 24th and our Sustainable and Resilient Infrastructure on September 28th. So we look forward to your feedback and comments then.

Today we are talking just about reducing energy consumption, and we had special points put out for the group to give us feedback on. If you need copies of those questions or the notice, they are available on the table back there. And because we are the BPU, we also have some other materials on our clean energy program. We encourage you to take advantage of that, too, and start reducing and killing those watts now.

So with that, I'd like to get started. And our first speaker will be from Rate Counsel. After that we will have Franklin Neubauer from Core Metrics

and then Nancy Griffeth from the U.U. Faith Action. So if I can have the Rate Counsel up first.

MS. MAURA CAROSELLI: Good morning. Thanks so much for allowing Rate Counsel to appear today. My name is Maura Caroselli, I'm an Assistant Deputy Rate Counsel with the New Jersey Division of Rate Counsel.

As some of you may or may not know, our office was created by the New Jersey legislature so that we may represent ratepayers in cases involving public utilities in all issues that involve rate cases in New Jersey. Rate Counsel did submit some written comments, so I'm going to summarize them here today quickly.

As the Board and New Jersey utilities endeavor to meet the new clean energy mandates, the most recently enacted legislation, just details on its powers, the cost of the measure will be at the forefront of the decision-making process. We must be able to fully understand how

and whether technology as a program is implemented with the purpose of energy reduction or add an unexpected financial burden to ratepayers despite any savings which results from lower energy usage.

Regarding the EE programs and lower energy reduction in general, various types of energy efficiency measures will lower overall energy usage while demand response programs can be used to reduce peak load and place downward pressure on rates. Further, appropriate rate structures are needed that capture the incremental costs of starting any new load attributable to electric vehicles and electric heating and to help ensure that this incremental electric load is directed to off-peak hours in order to avoid adding peak loads and burdening other ratepayers with the associated costs.

With regards to ratepayer-funded programs, ratepayer-funded programs led by New Jersey Clean Energy Programs, CEP, should play a leading and vital role in supporting energy reduction strategies

associated with electric and natural gas utility service. Ratepayer-funded programs should coordinate and integrate building measures, such as energy efficiency, renewable energy, and energy storage. And this is to provide comprehensive energy efficiency solutions for customers.

Ratepayer-funded programs should also be customized and targeted to address utility systems to try and mitigate capacity peaks, improve grid utilization, and avoid translation and distribution system infrastructure costs.

Additionally, the state should initiate an evaluation process -- and this is crucial to us -- conducted by an independent evaluator to study the benefits relative to the costs for each EE program. As stated earlier, any EE programs that are funded by utility rates, there should be an analysis of the cost effectiveness and the value of such programs, taking into account the interest of ratepayers as a whole.

Regarding utility versus state-run programs, the utilities have had some challenges demonstrating that their programs provide incremental benefits on top of benefits provided by the CEP, particularly when program participants receive incentives from both the state and the utility for some measure. Utility efforts should be channeled into areas that do not overlap with the CEP to prevent further free ridership problems.

Also a safe free ridership study should be conducted to determine the level of participation and savings the CEP would have achieved absent the utility programs. Such a study will provide critical inputs to help assess where utility efforts have been most successful and cost effective.

With regard to technology, some advances in technology that could be considered in this instance are net energy. Net energy buildings; deep energy retrofit; load control technologies, such as smart thermostats and controlled end-use load; thermal storage such as ice

energy storage, chilled water tanks, hot water tanks; and batteries, including electric-vehicle batteries.

And with regard to state policy, when considering whether these strategies should be led by the private sector or by the state, Rate Counsel feels that the state's overall policy and strategy construct should be developed through a governmental process. Yet, with regard to the private sectors, the state efforts should endeavor to address market barriers. And as far as feasible, private contractors should take the lead in many areas, after selection process.

With regard to codes and standards, Rate Counsel feels that building changes and incentives should be considered to promote green infrastructure. This can be achieved through many forums where best practices can be shared. Also communities can consider adopting polices that require builders to design homes and businesses with solar-ready roofs and, for example,

EE-ready wiring.

With regard to security, to the extent that the electric grid and natural gas utility services are digitized, we feel that critical infrastructure applications should be subject to even greater protective measures In general.

With regard to economic growth and workforce development, the state needs workforce training on maintenance, installation, construction, and inspection of various energy efficiency measures, including such emerging technologies as heat pumps, net zero energy buildings, heat energy retrofits, electric and thermal energy source systems, and load control devices.

With regard to environmental justice, in answering the question of how the state can keep energy affordable -- can keep clean energy affordable for communities, Rate Counsel's view is the state should conduct an assessment of climate vulnerability for persons in high-energy burdens in different parts of

the state, For example, very populated areas, And included in this assessment, a full assessment of housing stock.

Additionally, another way the Board can look at this is siting any new generation and energy facilities and consider the aggregate environmental wealth within those communities where these new generation facilities are sited.

And with regard to ensuring that disproportionally impacted communities are receiving benefits of the clean energy economy, it's Rate Counsel's view that the state should review, monitor, and report on the bill impacts of clean energy development over time, with particular on emphasis on disparate energy burdens of low income households in disadvantaged communities.

Just a summary of Rate Counsel's views on the issues, as I said, we submitted our full comments with more details and some samples of some of our thoughts. So thank you so much for listening today.

MS. BLUHM: Thank you. And as you alluded to, and I failed to mention, we are accepting written comments at emp.comments@bpu.nj.gov until 5:00 Friday, October 12th. That information is also in the notice if you need it, and it is up on the screen, and we welcome any feedback. Committees will be reviewing all of the comments that we receive. With that, is Franklin Neubauer here?

MR. FRANKLIN NEUBAUER: Yes.

MS. BLUHM: Okay. You're up next. And then I have Nancy Griffeth, and after her, Anne-Marie Peracchio.

MR. NEUBAUER: I am Franklin Neubauer of Core Metrics. I'm a consultant in energy efficiency planning, energy modeling, and forecasting. Thank you to the EMP Committee for this opportunity.

As the lowest cost and cleanest source of energy, energy efficiency offers tremendous benefits to the power system and the state. There are essential differences between energy efficiency and

energy production, which have held back previous administrations from saving more energy. There is no meter to measure how much energy we're saving, at least not at the state level. That poses a challenge. Despite that, we still need to estimate savings for new portfolios of utility programs, for new approaches to building design, for financing programs, and policies that put a price on greenhouse gas emissions. Economic theory tells us we should expand carbon pricing beyond just the power sector to other sectors of the economy.

So far, New Jersey has only skimmed the surface of what's possible with energy efficiency. Now the state must pursue energy efficiency more purposefully, achieving deep savings to displace fossil fuels and their emissions.

Fortunately, West Coast states have been showing us how to do that since the 1980s. Soon New Jersey will conduct a research study to estimate potential energy efficiency savings statewide. In

addition to that, there are opportunities to conserve energy that do not make anything more efficient, but simply cut down on waste.

New Jersey should track progress across all fronts. The way to reach the goals is to develop forecasts of New Jersey's energy consumption and update them periodically, so that when we revisit this plan three to four years from now, we can make direct comparisons and there are milestones to mark accomplishments along the way.

Improvised ways of measuring energy efficiency progress have hurt New Jersey before. In the 2011 Energy Master Plan, the Christie Administration changed how it measured progress in the power sector so it could eliminate an energy savings goal.

The recession also had a big impact on the size of cuts. In 2011, the EMP cut plans to save energy by 12,700 gigawatt hours, roughly two and a half times bigger than its cut to the RPS

target. Many environmentalists did not realize that energy efficiency programs were hit harder, and they focused on renewable energy instead. The public's attention was diverted from what they could see, that is renewables, and away from what they couldn't see, energy savings.

Another way that energy efficiency is different from energy production is how analysts add up savings. New Jersey will have a wide range of programs in the future. There are bound to be businesses and households who are affected by several programs at the same time. In those conditions, analysts should be on the lookout for double counting of energy savings. To avoid double counting, the EMP team, or Team Kilowatt, may benefit from specific end-use research. Occasionally savings estimates need to be scaled back to avoid double counting.

The new Energy Master Plan will need energy demand forecasts that represent business as usual, business as

it was in 2017. In order to track greenhouse gas emissions, forecasts are needed for petroleum products and natural gas, generation mix in the electric power sector, and leakage from imports of electric power. Those forecasts would enable modelers to establish a base case.

Scenarios showing how New Jersey can reach the administration's goals should include energy saving targets or milestones on our way to 2050. The point of milestones is to assure progress in energy efficiency -- again, there's no meter on it, so the milestones are helpful -- progress in energy efficiency and greenhouse gas reductions, and to assure the accountability of state government.

I suggest using a simple, transparent method like trend-extrapolation in the business-as-usual forecast in order to help create a reliable EMP process. If you think extrapolation is just too simple, and you want to consider forecasting that you consider more

accurate, I'd be glad to discuss alternatives afterwards. I would be glad to explain my reasoning.

The best examples of reliable energy planning processes that I know are in the Pacific Northwest, where I used to work, and RGGI. Those are regional energy planning efforts and they put a premium on transparency, which contributed to their long-term success. Next June's plan will be updated ten times before 2050, so reliability of the planning process is important.

The subject of best practices came up last week, so I want to address how to interpret the term "best practices." In 2009, Northeast Energy Efficiency Partnerships, known as NEEP, presented the Corzine Administration with an energy efficiency strategy that was filled with best practices, and I was a big fan at the time. That does not mean the strategy was a good fit for New Jersey. Organizations like NEEP and ACEEE, which some of you may know, select best practices mainly on

engineering and administrative criteria, which they can judge. They cannot judge the political, economic, and institutional circumstances in the state. Those factors need to be judged by elected officials and their staffs. So when I hear something is best practices in energy efficiency, I think great, but judgment calls still have to be made about whether those practices are likely to work in New Jersey.

I know that the caliber of economic analysis provided to decision-makers on energy policy can be improved. I am speaking about analysis for the EMP and what may come later. For renewables and other supply-side planning, power system models are very helpful, but for energy efficiency and demand-side planning, most big models are of limited value. There are exceptions, and I was fortunate to work on one such project for the Bonneville Power Administration using its Conservation Policy Analysis Model.

Smaller models and tools are often useful for demand-side economic analysis.

Analyzing economic impacts to program participants and to distribution utilities requires a broad perspective that includes the average cost of energy savings, utility rates, customer bills, and conservation supply curves.

Societal benefits of energy efficiency are far reaching. Priority must go towards reducing environmental externalities. Some benefits can be quantified reliably, and measurement should be rigorous, never improvised. Cost-benefit analysis of clean energy is a highly specialized area in economics, and the discipline imposed by economic analysis can ensure that non-energy benefits are measured objectively. Objectivity and a disciplined approach will pay off because public funding is involved, and so public support is essential.

Now I want to highlight five policy options that harness market forces, which the EMP should consider. These will provide opportunities to save money and

lighten any upfront costs of the plan.

Number one, targeted financing. When financing programs are targeted at specific barriers to energy efficiency, like PACE, they can be very effective.

Number two, demand response. As BPU staff has noted, these programs are voluntary and provide effective price signals to consumers who want to save energy and money.

Number three, time varying rates. Opportunities to shift loads to off-peak hours can hold down costs and emissions.

Number four, benchmark buildings. Benchmarking is intended to disclose key information about a building's energy consumption so that markets can be more efficient at valuing individual properties. The new clean energy law is a partial step in that direction.

Number five, put a price on carbon. Participating in RGGI will facilitate cooperation with like-minded states. RGGI states are exploring policies for deep decarbonization using

the grid.

Another group of states formed the Transportation and Climate Initiative, which has explored pricing carbon in the transportation sector. Even broader approaches to carbon pricing have been proposed by state legislatures. At one time, Massachusetts, Rhode Island, and Connecticut, were all looking at similar carbon tax legislation. Opportunities to cooperate on carbon tax plans should be explored.

Before I conclude, I want to offer a perspective on past BPU hearings where energy efficiency was on the agenda. The hearings I remember from several years back seemed somewhat contentious and, I think, unnecessarily so. They framed energy efficiency as just another expense without tangible benefits to the power system. The cost advantages of energy efficiency are not fully recognized by the BPU. I believe demand-side resources have been handicapped relative to new generation and other BPU priorities.

There may be administrative remedies to this imbalance.

Originally, I intended to offer much more input on the subject of forecasting. However, there are time limits and I decided public comments are not the best forum, at least at this time. I am receptive to presenting that material I prepared on slides in another setting. Thank you.

MS. BLUHM: Thank you. Nancy Griffeth? And then again on deck is Anne-Marie Peracchio and Richard Lawton.

MS. NANCY GRIFFETH: Hi. I'm Nancy Griffeth from the Environmental Justice Task Force, Unitarian Universalists Faith Action New Jersey, which is a mouthful. I've got it out. We are also partners in Jersey Renews. I'd like to thank you for giving emphasis to reducing energy consumption and the good work that the Office of Clean Energy has been doing.

However, from conversations with people in the building industry, we

learned that there's a problem with the societal benefits charge. A contractor who works in Short Hills, in Elizabeth, said that almost all the rebates go to Short Hills. Now, I know Short Hills is a long way from here, so Short Hills is a very wealthy community. But it's interesting. Everyone pays for the societal benefits charge. This amounts to a transfer of wealth from poor communities to the wealthy communities. We do appreciate the motivation of the societal benefits charge, and we believe the side effects have been entirely unintentional. We also believe that it's important to reward energy reduction, but we want to reward it in a way that rewards all citizens for their efforts, not just the wealthy.

So we challenge the BPU and all the environmentalists here in the room, everyone here in the room, to come up with approaches that will reward the efforts that lower-income people make to reduce their energy uses just as much as those of

higher-income people.

Also, I just, as aside to the Division of Rate Counsel, in response to the comments about evaluating energy efficiency efforts and the cost-benefit analysis of that. As a retired computer scientist, I always appreciate the quantitative approaches and I would like to -- them to include -- or you to include a cost and benefit specifically to disadvantaged communities and in such analysis. I think that analysis is a great idea, But it should address specifically disadvantaged communities.

There are a number of other issues we addressed in our written comments, including approving an electrified New Jersey Transit and the state police, modifying the building code to encourage green buildings. I'm sure you'll hear a lot about these things in subsequent comments, so we just wanted to emphasize the importance of rewarding energy efficiency in disadvantaged communities as much as in wealthier. Thank you.

MS. BLUHM: And thank you for your comments. We are taking environmental justice concerns into consideration with the Energy Master Plan. As you can see, there are some questions within our groups' discussion points, but we are looking at that.

Anne-Marie?

MS. ANNE-MARIE PERACCHIO: Thank you. I'd like to thank you, Sara, and the rest of the committee for the opportunity to provide comments here today. The first thing that I would suggest, though, is that you have to revisit your group name on Team Kilowatt. The gas companies have had a strong history of supporting energy efficiency and we're ready to do even more.

Good morning, everyone. My name is Anne-Marie Peracchio. I'm the Director of Conservation and Clean Energy for New Jersey Natural Gas. I've been an active member on the energy efficiency committee for their disciplinary program for more than a decade. I also served on the

portfolio advisory committee for the consortium for energy efficiency, and as the New Jersey Natural Gas representative on the state and local energy efficiency action network, See Action.

New Jersey Natural Gas has been working hard to engage our customers in creative ways to reduce their energy usage since 2006, when our conservation saving program was approved. And then we significantly expanded those efforts in 2009, when our energy efficiency programs were approved under the name Save Green Program.

All of our energy efficiency programs are designed to work collaboratively with New Jersey's clean energy programs so that we're providing more comprehensive solutions to our customers. And we're very proud of what we've accomplished so far.

We had more than 52,000 customers participate. Put that into perspective, that's nearly 1 out of every 10 of our customers, and it's extra significant when

you look at that, thinking that our rebate and credits are significant, they're not light bulbs. These are HVAC and whole-house, whole-building programs.

We have more than 2,600 conferences across the state and we've invested more than $159 million. So it's through the experience we've had running our programs and our efforts on the national scale with those other organizations, working with customers, with trade allies in the organizations, that we'd like to just share a few thoughts.

In the general sense, within that category, we don't have time to write suggestions on all the different types of things that need to be in the programs, but the goal, the most important thing, would have a diversified portfolio program to ensure that all customers have the opportunity to participate in the energy savings.

There certainly has to be special attention to make sure that we support our

low-to-moderate income customers, but also even particular segments of customers. We may focus on renters, seniors, we may need to slate them a little differently than we've done in the past, make sure that they participate.

For commercial and industrial customers, we should expand the efforts in terms of commercial customers by industry segment, to help ensure that we're reaching all customers and they're aware of the resources, And also leverage the work of national groups such as PEE, the DOE Better Buildings Network, select some others to share best practices. I'm very glad that in the past year, New Jersey's Clean Energy Program did rejoin Consortium for Energy Efficiency and that -- attending as well is a great opportunity to learn from others.

In regards to the benchmarking requirement, we encourage the state to establish the rules as soon as possible and consider building in a demonstrative compliance waiver for early champions so

that customers like built to lead standards or making an Energy Star certified building understand that they have a clear path to ensure compliance, and it actually even could serve as a marketing tool for us in the meantime, if we can engage more people to show that they will be able to comply with those requirements.

In regards to non-energy benefits, there's been a tremendous amount of work that's been done by ACEEE and Lawrence Berkeley National Lab. They've done a great job of documenting the broad range of benefits, from health and safety on the residential side to employee productivity on the commercial side, resiliency. So there's a lot that New Jersey can learn from both the studies that have been done and then also seeing how other jurisdictions have dealt with it and considered it.

We would encourage the state to go beyond just thinking about the non-energy benefits and actually take a step back and

look at the cost benefits overall, Particularly using the National Efficiency Screening Project resource value framework as a way to really tackle how we're looking at cost benefits. A lot of the cost benefit approaches do a great job of capturing all the costs, but not necessarily all the benefits because those are often harder to quantify. But we can learn from what others have done.

In regards to technology, we believe that it's critical that the energy efficiency programs have a dedicated emerging technology program. An emerging technology program funds investments to develop critical insights that will help the state with longer-term strategies to reach climate goals for us to keep that from gaining a technical and market understanding on the installation, performance, reliability, and serviceability for those new solutions so we can get them out to customers as soon as possible. Funding supports those program technologies that we will need to

get to the longer-term view and provide less risk and more certainty on getting there.

If we look at all the leading states in energy efficiency, they have made those commitments and have emerging technology programs. They understand how important it is when you want to produce and pursue the aggressive energy reductions and it's also very significant when you go to implement the codes and standards. Because when you make that advancement that you are -- that you get from energy efficiency kind of fall out of the bottom, so you need something else that's going to come in and replace that with efficiency standards.

It really helps to understand what's ready for broader adopting, but we will definitely need conference training, customer incentives, and other key elements of the marketplace, understand the value opposition for those new technologies.

When pursuing those DEP programs,

we need to consider the support for both the existing workforce and our next generation of energy engineers and technicians, that ensure that they understand the proper encoding of the newer technologies.

An ET correction also ensures that natural gas technologies are considered. Our team currently participates in the Gas Technology Institute's emerging technologies programs and the Energy Solution Center. From our involvement, we recognize that are several new gas technologies are approaching commercial breakthroughs.

Gas heat pump water heaters are becoming available for the commercial market. And given the opportunity to access greater than 100 percent efficiencies with heat pump technologies -- we need to look at that on the gas side as well so that we're getting more energy out of every therm that's used.

Also, several manufacturers have made advancements with micro-skid pieces,

which significantly broadens the pool customers that may be able to make use of both the heat and the electricity of systems, which has potential for added variety. So, again, getting more out of the energy that we are using.

In regards to codes and standards, New Jersey gets high marks on code stringency. The last year's ACEEE scorecard New Jersey got the full points for both the residential and the commercial code stringency, and in the coming decades New Jersey can continue to be a leader on adopting those codes when they're ready, and also considering the opportunity to expand benchmarks and requirements. The real opportunity is to improve compliance so we can look towards greater opportunities to work closely with DCA and support code and official and trade allies with additional training.

Shifting the outreach to -- and education to compliance with all installations can also get us additional energy savings. Because right now there

are some pieces that are required from the energy efficiency programs that are considered burdens for crew main -- take, for example, the equipment sizing requirements, is just looked as something else that has to be done on the energy efficiency programs. But if we push it to require that everyone is doing it, then even if someone chooses to install standard efficiency, that we get the benefits of those.

In regard to the reliability segment, gas definitely has a role of demand-response. We've done it for years with interruptible customers and there are new opportunities, there are pipes are coming out with those involved in small changes on the behavioral side of a larger pool of customers, and then also even having other commercial sites that still meet firm requirements but can play in a manner -- market where they can cut back their usage.

In regard to workforce development, it is definitely critical for

us to continue to expand what we're doing, working with technical colleges to identify the needs, so fiscally the clean energy economy and to also consider that it's beyond just the technical resources that we have now.

So one other real important point that I just wanted to come back to in regard to the earlier comment about the programs only going to affluent customers, it's very important to recognize that that could be happening to some of the programs, but there is a great network of programs through the Comfort Service program. We've worked collaboratively with the other utilities, more than 112,000 customers that we've helped through them, so there's a significant barrier that's there.

About 30 percent of the audits that we go out to do we cannot help those customers. If the customer is interested, we've already made the effort to get out there because of structural and safety issues with the premise. So we need to

try to improve that, to make sure that those customers can participate. We are very encouraged by the recent efforts of the DCA to work on potential federal funding, but we've got to find another funding source that we can address those other pieces that aren't directly related to energy.

So We definitely appreciate the opportunity to provide our feedback here today, and -- actually, just one last thing about the low/moderate, it's just additional features within programs that we need to consider. Our ongoing payment program also gets front page so that they can turn on the -- because it sets traditional credit screening. We use utility payment history, and then also after bankruptcy, and that enables a lot more customers to participate. So thank you for the opportunity to provide comments.

MS. BLUHM: Thank you, Anne-Marie.

And so folks who may be new in the room we do have additional seats. You'll

have to come all the way down here, but there are more seats over on this side, so we welcome you to take one of those.

And now we have Richard Lawton, On deck is Wayne DeFeo, and then Joe Accardo.

Richard, are you here?

MR. RICHARD LAWTON: Good Morning. I'm Richard Lawton. I'm the executive director of the New Jersey Sustainable Business Council. We're also a member of the Church of Organic Coalition. And NJSBC is a coalition of triple bottom-line businesses that cut across different sectors and also different sizes of business. We hold high the belief that it's possible to be commercially successful, also being environmentally and socially responsible in how we run our businesses.

So each one of our businesses are doing what they can to integrate sustainability values and practices in their operations and supply chains. But they also know that policy's important because policy, law, rules, regulations,

also have a huge influence on how markets function and how companies like ours compete against each other, And they also compete against other companies that have kind of different business philosophy. Is about maximizing short-term profits, which includes sometimes externalizing costs and risks to their communities and to the environment. So this is in terms of us working together to advance both market solutions and policy change.

We're looking at, you know, large-scale systemic change to create a more sustainable, more vibrant, and ethical vision of the economy. We think that one of the areas of leverage to focus on is the transition to clean energy, which includes using the energy resources we have more efficiently.

We think that improving energy efficiency through smart policy change that leverages and incentivizes market derivation, market innovation, will benefit those businesses' bottom lines, but also reduce carbon emissions and

protect human health. So all three of those priorities and goals are naturally aligned as it is, so this is a huge opportunity to make sure we capitalize on that alignment.

I've already submitted written comments, which are more detailed, so I'll just keep it kind of brief on highlights of the top-line recommendations we have before I introduce of our business members who has a lot more expertise in this area. Okay?

So our first recommendation is to make sure we that improve energy savings by requiring a set reduction per electric and natural gas usage for New Jersey by year 2030 with clear, measurable benchmarks, including support for conservation programs.

And then, secondly, and more specifically, expand energy efficiency improvements at industrial facilities and large-scale commercial facilities since there's a lot of outside (inaudible), and do this by considering property tax

incentives for commercial buildings that exceed the specified energy efficiency score. This will require all commercial buildings to be audited and scored using the Energy Star Program. Also, those buildings that fall below a certain score to be assessed an additional utility efficiency tax, the proceeds of which would go towards funding efficiency incentives.

Number three, improve green building standards for new and existing construction by examining and updating trade and building efficiency codes and requirements. Also provide funding for qualified labor training, providers to train employees in operations, and maintenance to optimize building performance.

Another important thing that is very important is just transparency in terms of energy usage to make that available to people, so establish energy data transparency to make sure that -- so based on permits to access to energy data

is the foundation for any real building efficiency progress. Residents and building owners get simple access to understandable, reliable information about their energy usage. And maybe you should give building owners and managers electronic access to monthly whole-building aggregated energy consumption data, since being able to measure and identify energy reduction is critical, or businesses can basically work under the premise that if you can't measure it, you can't match it. So this is the important part.

And, as we've already touched on it a little bit, the environmental justice communities and impacts clear up just -- a different dimension to that, invest in EJ communities and job training. Create an apprenticeship program, much like those in South Carolina and some European countries, but specifically tailor this to offer companies tax incentives to hire and train EJ community members to perform energy efficiency related work within

their home areas.

And then, finally, just a final point, is that all funds earmarked for energy efficiency programs should only be used for their intended purposes, so somehow briefly protect -- prevent them from being diverted to general funds for any other purposes.

So that's kind of a summary of our recommendations. I just want to end by just thanking Governor Murphy for his leadership in this important area and also express our appreciation to BPU for taking on such an important and complex task for us and also making this as simple a process.

So I'd to introduce one of our business members, Mr. Scott Fischer, who's the founder of Ciel Power.

MR. SCOTT FISCHER: Good morning. I'm ducking in on Richard's ten minutes, so I'll try to make this very brief. My name is Scott Fischer. I'm a co-founder and managing member of Ciel Power. We are a participating provider of the New Jersey

Clean Energy Program. And we're the boots on the ground, so to speak, of making residential energy efficiency improvements on homes throughout New Jersey.

I appreciate everybody being here. I wanted to just commend a lot of the folks here today on the progress that New Jersey's made already towards energy efficiency. A lot of the folks in this room have devoted a lot of time and effort to the programs that are in existence right now, and I would really like to echo the sentiment that we keep the funds that are appropriated for new clean energy improvements, specifically energy efficiency.

According to New Jersey Future there was $1.5 billion that was diverted from its intended purposes of making energy efficiency improvements here in New Jersey into other funds, even as recently as this year. So I would -- whatever we can do to potentially legislate or what have you -- that we can do to keep those funds for their intended purposes, I think

would be very important.

Additionally, we -- there was comments earlier today that things that can be challenges to upgrading buildings to make them more efficient. I think that those challenges would be well-served by looking at some of the collateral things that come up in the progress of making buildings more energy efficient.

Specifically was the environmental justice issue, serving lower incomes, and also serving the middle class. A lot of middle class families don't take advantage of some of these programs because of the collateral issues that can happen as you work to make the home more energy efficient. So it's important to look at some of the by-products that occur of installing energy efficiency improvements and how we can help home owners navigate some of those by-products. And they're all well documented, and I'd be glad to submit additional information on this as well.

Finally, making some sort of a

process where we make energy efficiency more mainstream. It might be doing things like in Austin where -- or Berkeley or other communities where energy audits are a function of buying or selling a home. Just making energy awareness and making it more well-known to home owners that there are things that they can do to improve the comfort and the efficiency of the houses that they own and use less energy is -- as a function of their daily lifestyle. I don't know that that's necessarily out there as much as it could be, and yet maybe we could look into some sort of a way to make that more mainstream, would probably benefit this process tremendously.

So thank you all for your efforts here. I really appreciate being here today and thanks for sharing your time with me, Richard.

MS. BLUHM: Thank you. Next up is Wayne DeFeo, after that Joe Accardo and after Joe is Doug O'Malley.

MR. WAYNE DEFEO: Good morning.

I'm here representing today U.S. Green Building Council for the New Jersey chapter. One is as advocacy as a board member, and second, as of 8:00 last night, as the acting executive director. So I don't know if that's be careful what you wish for or not. I'm going to be very brief here today and we'll submit written detailed comments to you after the fact.

What we really want to touch on are highlights of things we believe will help get to our goal. As We all have said many times, you've heard it many times, the best kilowatt hour is the one you don't use. One of the first things that we would really emphasize -- and you may have heard this or hear it in testimony -- the societal benefits surcharge that exists must be sacrosanct. It has been rated every year. That is not what ratepayers are paying for. That money is being wasted.

Secondly, in terms of training We would encourage -- we have a good energy code. Our code enforcement officers need

more training and we need more enforcement of that energy code; we need that enforcement to be uniform. What our members do is guide you -- we see a huge level of inconsistency. That does not help us achieve our goal of reducing energy.

Thirdly, our direct energy and clean energy programs are great. The concept is saddled. It needs to be worked on to be easier. It needs to be more user-friendly. For myself, I've worked, as a courtesy, with a local business in our community. If I wasn't there with them literally holding their hand and working with good people, and if we had a state-level who really helped us walk through it, the store would not have had new HVAC and new lighting. We reduced his -- best measured, by the way, is after much trial and tribulation, his electric bill was lower this year than last year, even though it's an air-conditioned space. If that doesn't tell you it works, I don't know what does.

But if I was not there to help him walk through it, as a courtesy, it wouldn't have gotten done. So we need to streamline, prioritize, make it easier for business to access those funds by making those funds more portable and more creative. Let's think outside the box.

As far as residential, we would love to see some sort of reinstitution of that energy audits for homes, but we would like to see that program, I should say, expanded. One of the problems we've seen is people doing the audits are also someone you work with. That raises all sorts of questions. Not to say they're doing anything wrong, but an independent audit, then leave the contractors doing the work, would seem to make more sense.

It was also suggested, we really want to help the residents of this state. Let's consider taking the residential rebate programs on a sliding scale. People who have needs don't need a $500 rebate on their boiler necessarily. Not that you shouldn't give it to them, but

someone who is in a low- or moderate-income home, that $500 is not going to be sufficient for them to put in a system. And we lose the very people who we need to be more energy efficient because they're the ones who can't afford the energy efficiency to start with. So we would suggest considering a sliding scale. It could be tied to COA, it could be tied to some existing financial system.

We would also suggest, and we've been trying this now for eight years as a chapter, that we get the state to adopt the International Green Construction Code for all buildings. For commercial buildings, it would be lovely, but formally to say let's start with all buildings receiving state funding right now, about 10,000 square feet or 5,000 square feet. The reason I suggest that is the IGCC encompasses many of the energy savings programs you heard today. It encompasses many of the green building elements that our organization stands for, and it requires measurement and

verification by third parties. That's a critical component of any energy conservation plans that may go forward.

I would also suggest that any state buildings over 10,000 square feet that are new be green certified. There is talk about it, there is something in the code, but we do not have a uniform administration. We are concerned there is no actual third-party verification. Why do I think we need these specifications. Secondly, it is a program that requires third-party verification. Buildings cannot be recertified if there is not a third party verified. And that hasn't happened.

We would also suggest that existing buildings over 15,000 square feet that are state buildings should go through certification as well so state building certifications exists. There many buildings that do that. There are many commercial buildings that do that. One of the things that could be shown in energy conservation and through green building

and sustainable building standards are two very important points:

One, productivity of employees rises on average, based on third-party studies, by 10 percent in sustainable buildings. Ninety percent of the cost of running a building over 20 years is the cost of the people in the building, Not the energy. If we can improve -- think about that, how many state workers do we have now? If we improve the productivity in every state building by 10 percent simply by giving people cleaner air, better lighting, better access to energy efficient and thermally comfortable buildings, that's a pretty big boost to the economy. And that's it. Thank you very much.

MS. BLUHM: Thank you. Joe, are you here?

MR. JOSEPH ACCARDO: Yep. Good morning. My name is Joe Accardo. I'm chief regulatory officer for PSE&G, and I appreciate the opportunity on behalf of PSE&G to speak here this morning.

We provided our initial thoughts and comments with respect to Governor Murphy's proposed 2019 Energy Master Plan and today's second of five stakeholder meetings. PSE&G really applauds Governor Murphy's bold commitment to reducing energy consumption and investing in energy efficiency.

We believe one of the most important missions for utilities will be to help customers use less energy. To achieve that, though, utilities will have to reset our core business model with a shift to 20th century models in which utilities sell as much electricity and natural gas as possible, to a new approach: Helping customers use less energy and thereby save money on their monthly bills. This is a paradigm shift and it's going require adjusting to how rates are set, encouraging utilities to help customers use less energy while still allowing utilities to collect the revenue needed to provide safe and reliable utility services.

The current business model creates a disincentive to promote energy conservation and efficiency. This is a disincentive that exists and it must be eliminated if the energy reduction targets of 2 percent for electricity and 0.75 percent for gas are going to be achieved.

Energy efficiency is comprised of many components and include the following: Really encouraging customers to upgrade to appliances and equipment that use less power while providing the same or greater level of service, comfort and convenience that they're accustomed to.

It's also using more power incentives when demand is low and less when demand is high. It's installing equipment to allow motors to run at lower speeds and save energy when full power is not in use. And, finally, it's also installing more efficient LED lights and exhaust fans to avoid using air conditioning.

Energy efficiency delivers clean energy better than -- similar to solar and

wind, but at a fraction of the cost to customers. Energy efficiency costs less than any source of electricity, whether fossil fuels or renewables. Energy efficiency saves U.S. customers approximately $90 billion per year, and that translates to a household savings of about $460.00 per year.

There are broader benefits for the environment and public health as well. Energy efficiency already helps reduce carbon emissions by nearly half a billion tons per year. Reducing electricity use by 15 percent can prevent 30,000 asthma attacks and save Americans as much as $20 billion in avoided healthcare costs.

Across the nation, the most successful energy efficiency portfolios are operated by utilities with state regulators providing strategic leadership and oversight. In New Jersey utilities must also take a leadership role to ensure we achieve the aggressive energy conservation goals established in the Clean Energy Act and that energy

efficiencies benefits are available to all customers regardless of income.

Given the mandatory energy reduction targets and new clean energy law, utilities must be free of any unnecessary encumbrances that would prevent them from meeting these targets. When done correctly, energy efficiency can provide a big win for customers and the environment.

PSE&G as well as every gas and electric utilities is uniquely situated to implement energy efficiency programs given its pre-existing customer relationships, experience in implementing award-winning energy efficiency programs, ability to provide on-going payment options, and access to customer usage data.

There is no question energy efficiency should be our top priority, but we also recognize that other priorities need to be addressed. The U.S. must continue its conversion to renewable resources. We must also preserve our existing climate-friendly resources such

as nuclear while safety -- which safely supplies 20 percent of the nation's electricity and more than 50 percent of its carbon-free electricity.

Because transportation represents the nation's largest source of greenhouse gases, utilities should lead the drive to electrified sector, by investing in the automobile sector and universal UV charging infrastructure. We're seeing automakers step up here and in Europe. Now it's time for utilities to act as well.

Utilities also should continue to leverage technology to help make our grid more reliable and give customers the tools they need to help customize their energy use in whatever manner suits their needs, whether it's cutting costs or reducing their carbon footprint. Even as utilities evolve, we must also realize that the existing infrastructure remains essential to our business. That's why we must continue to invest in modernizing the nation's aging electric and gas networks.

For most of the last century, American utilities were engaged in a rush of pure growth and expansion to spread the availability of electricity and natural gas as far and as wide as possible. The achievement of universal power supply unquestionably was, and remains, a public good of the utmost significance, which resulted in improved health, education, and economic opportunity for entire communities. These advantages are why the modern or energy grid is considered the most significant engineering feat of the 20th century. Necessary efforts to maintain what we have achieved must be continued.

The utilities today are also leading the new era of growth and change. Clean energy resources such as solar and wind will be part of that. Other innovations such as electrifying transportation, energy storage, and smart energy platforms as well will all be game-changers in this space.

But it is energy efficiency that

has the greatest potential at this time to transform the energy sector and its relationship with customers, while providing reductions that are needed to meet our climate challenges.

I thank you for the opportunity to appear here today to provide these comments.

MS. BLUHM: Thank you.

Doug?

MR. DOUG O'MALLEY: Good morning. My name is Doug O'Malley. I'm the director of Environment New Jersey. I wanted to thank the chair of this process, Sara Bluhm, for the work already and the work ahead, and the chair of the Energy Master Plan process, Grace Strom Power. Many late nights already, and many to come.

But I also wanted to specifically thank the relocation of this hearing to the State House. As much as I love the Barbara Gitenstein Library, I think all of us are happy to be back at the State House. That being said, I also want to

encourage BPU to consider hearings that are outside of non-traditional business hours, and as much as we love Trenton, outside of Trenton.

I wanted to start off by saying that we are thrilled to be here, thrilled to be part of this process. I am a proud member of the Jersey Renews Coalition. We've already heard from New Jersey Sustainable Business Council, Faith Action, we'll hear a little bit later from the Work Environment Council and New Jersey Sierra Club, as well as many others. We represent more than 60 labor, faith, environmental, and community organizations. We've also already heard from Ratepayer, from New Jersey Natural Gas, and Franklin Neubauer.

I think energy efficiency provides a unique opportunity where there's mass agreement that we need -- that not only need do we need to do more, but there're benefits for everyone. And I think, when we think of energy efficiency, as we heard previously, energy efficiency sometimes

can get the short end of the stick because we do not think, even in this room, of the energy that's used to light the room, and to heat the room, and cool the room. And if we, as kind of energy professionals, aren't necessarily thinking about that all the time, how can -- the general public is not thinking about that.

And in that vein, we're obviously incredibly excited that Governor Murphy traveled to California to be part of Global Climate Action Summit. It reiterated his commitment to 100 percent clean energy by 2050. That's a commitment that is imperative upon having the state invest more in energy efficiency.

And as former GP commissioner and former EPA administrator, Lisa Jackson, said again and again, and obviously others as well, that the energy that we do not use is the cheapest form of energy.

That being said, I think it is critical to talk about how we achieve those goals and specifically to ensure that we are referencing the Global Warming

Response Act of 2007, the importance of reducing our emissions by 80 percent by 2050. And specifically I just wanted to talk with you about the importance of staffing state agencies and specifically the Board of Public Utilities. There is a ton on the plate of the BPU, as you well know, and it is critical that our FY20 budget reflect the importance of the initiatives that are on the BPU's plate.

A quick summary, then as all of you know, there's fewer emissions credit program that is ongoing. There's obviously this program, which has deadlines of June 1st and another round of public hearings and another round of public comments.

You know, and this is not just about public hearings. This is about implementing the programs and doing the outreach and that needs to be reflected in state budget. We need more money and focus on -- for all agencies, but specifically for the BPU.

I also wanted to talk about one of

the on-going challenges with BPU, and specifically with the Office of Clean Energy, which is we are fighting this fight with one hand tied behind our back. And I think it is critical that we're in this room and this building right now because the BPU obviously does not control the state budget, that's a decision by our governor and the legislature.

What we've seen over the course of the Christie era and into the FY19 budget is continual raids of the clean energy fund. And obviously the strategic plan or course over the next four fiscal years, you know, talks about, in a euphemism, the energy -- I might get the exact wording wrong, but it -- energy initiatives. Energy initiatives are another word for a budget raid and this legislature, time and again, is raiding money from the clean energy fund, having it go to the general fund or to fund New Jersey Transit.

And so it's critical that our state leaders, from the legislature to the governor's office, work to end these

raids, to write down a strategic plan. The weeding process is exactly that, it's weeding. And so we're talking even FY22, $128 million being raided from the Office of Clean Energy and poured into an energy fund. That makes it hard to achieve these goals.

I wanted to kind of come back, and I obviously referenced the clean energy bill -- obviously, there's those advantages as well. We've already heard from Ratepayer and others and Frank Felder from Rutgers Energy Institute, which certainly talked about the importance of evaluation for the Office of Clean Energy.

I wanted to thank the BPU staff because they have obviously been working to make the Office of Clean Energy effective. And if they could -- there's been honesty within the program on using outside consultants like ERS to talk about how the program can get better.

And just -- as a place of summary, I wanted to reference the executive summary that was issued in 2016 and then

pushed out in early 2017. It talks about program motivations and goals, that specifically there needs to be -- the Office of Clean Energy is higher in its goals, but there's no clear consistent strategy for getting specific objectives, targets, and metrics.

And, number two -- or item number three, marketing activities are underfunded. These are just averages. Number five, customers and trade allies or happiest with the result, but not the process involved, and burdensome. Number six, there's little evaluation and measurement and verification of data from proven program performance. And then, number seven, more comprehensive and specific programs will benefit from adjustments.

So already there is an on-going process to make things better for the Office of Clean Energy, but there needs to be the state funding to make that happen.

We've already heard some of the policies that are being discussed. I want

to come back to one of them, which I referenced, which is critical, which can provide funding for energy efficiency, and that is RGGI. And obviously the BPU and other agencies are involved in the re-entry process and we have the global warming solution fund. We have the mechanic tool.

The negotiation process must have the strongest emissions cap, not only because that's the best way to reduce emissions, but that is the best way to ensure that you're getting more funding and the best in clean energy solutions.

And we've seen examples from NISERTA (ph), we've seen examples in Connecticut with their green bank. You know, these are -- you know, this really is the funding that can help us to achieve our clean energy goals. So some of the other initiatives that were mentioned that I think is important to come back to.

In terms of marketing, there's been a clear drop in marketing over the course of the clean energy. That's kind

of an easy fix for where we're planning to go.

I think it's also important to acknowledge that you some of the lowest-hanging fruit, especially on lighting, We're not there yet entirely, but obviously larger improvements are going to be harder, and so we need to be able to have the funding to be able to go after, not just the low-hanging fruit, but some of the larger challenges.

I wanted to talk specifically -- and this gets into more into the '20s of economic growth, workforce development, those questions, as well as environmental justice. Someone -- the progress that we were making a decade ago through some of the small HVAC contractors and -- and obviously let me know if I'm getting close to time. I want to respect the need to get others to testify here.

But I think it's critical to know that eight years ago, the EDP, the current Supreme Court Justice Lee Solomon, the former BPU president at the time, heard an

earful from more than a hundred HVAC contractors saying please do not raid the funding because it will put us out of business or it will reduce our clients.

And we've seen that come to fruition, whether it be the training programs right here in Trenton, the Isles with the Center for Energy -- CEET program. That is a training program that is incredibly important, and they've had to cut back -- we see private companies, when Princeton Air that advocated for more workforce training programs, they've had to cut back their programs because of the raids of the Clean Energy Fund.

So when we talk about the impact of energy efficiency, we need to have bold, ambitious goals, and we need to have that 30 percent reduction in energy efficiency by 2030, but we need to make sure that we have the funding in place to be able to achieve those goals.

And I just wanted to conclude by saying that our hearts in New Jersey obviously go out to those of our friends

and family and literally millions of other Americans in the Southeast right now. People are suffering from Hurricane Florence, and we need to remember that energy efficiency is not just about hot water heaters, it's about reducing carbon and reducing air pollution, and ultimately saving lives. Thank you so much.

MS. BLUHM: Thank you, Doug. I can let you know we are working on some of the items that you discussed and we're very excited for that addition as well. So thank you.

Next up will be Jonathan Cloud, after that that William Atkinson, and then David Pringle

MR. JONATHAN CLOUD: Hi. I'm Jonathan Cloud, executive director of New Jersey PACE. Properly Assessed Clean Energy, or PACE, is an innovative means of financing clean energy and resiliency improvements in buildings. We provided a brief overview of PACE last week in connection with this session, clean and renewable power. This week I want to

focus on PACE's relevance to energy efficiency.

In fact, more than 50 percent of PACE projects nationwide have been focused on energy efficiency improvements, Compare with about 25 percent over another 25 percent of mixed energy efficiency and renewable energy. The main reason for this, I think, is there are a variety of methods for financing solar, including our purchase agreements and leases, but There are far fewer methods for financing energy efficiency and upgrades.

Just to re-cap some of what we said last time, PACE has been adopted by a majority of U.S. states since its invention in California in 2008. Most recently, both Pennsylvania and Delaware passed PACE bills and their respective governors signed them into law, bringing the number of states to 36, plus the District of Columbia.

New Jersey updates legislation in 2011, but unfortunately the present statute is missing key elements that would

allow its adoption in the Garden State. We've been working with the legislature for several years to draft amended legislation, which we hope to see signed into law later this year.

PACE allows property owners to make energy and resiliency improvements with 100 percent long-term off-balance sheet financing. This financing is secured by a voluntary special assessment, like the Bergen (ph) municipality. Special assessments are widely used in New Jersey to finance improvements such as sidewalks, sewers, and libraries, just to name a few. The Key difference here is that PACE is voluntary and is tailored to the needs of each individual property to make major improvements and pay it off in terms of as much as 30 years.

Our brief to the EMP lays out the features, benefits, and potential for PACE in New Jersey and suggests that over the next several years it can play an important role in the transition to 100 percent clean energy. PACE has the

potential to literally remake and transform the bills environment around us.

Major energy retrofits can make our buildings both more efficient and more comfortable year round, saving money and cutting carbon emissions. It is estimated that 50 percent of all the energy produced in the U.S. is wasted. PACE energy efficiency projects typically cut building energy costs by 30 percent or more. Most projects are cash-flow positive from the get-go. Fiscally driven property owners will typically demand that their ongoing savings always exceed their out-going costs. The good news is that with PACE property owners reap immediate and on-going cost savings while using someone else's money.

Meanwhile, the investor is receiving an attractive rate of return on an investment that is highly secure, being repaid through the town's property tax collection mechanism.

There are very strong market incentives, therefore, to encourage

utilization of private capital and they're enabled by state-based legislation that allows municipalities to exercise the governmental power at literally no cost to the public to secure the improvement loans. The estimated potential for investing in existing buildings alone exceeds $130 billion in the state based on an informal market assessment by New Jersey PACE.

One of the passage of new applications for PACE is the new construction, where the green elements of the project may represent up to 30 percent of the cost, thereby reducing the requirements for equity or more costly doesn't mean financing. PACE is expected to become a standard component of the real estate developer's capital stack.

Consequently, PACE may prove to have as great, if not a greater, impact on building performance as the historical deployment of incentives through the New Jersey Clean Energy Program. PACE does not compete with any of these incentives,

but rather provides a complimentary mechanism to facilitate the uptake of both programs. Financing whatever is not covered by subsidies or other incentives simply removes another barrier to property owner acceptance.

The benefits of PACE to the public include carbon reduction, improving ability to stock up the community, and economic development. For every $1 million of investment and improvements, 50 jobs are created. PACE is voluntary for both the municipality and the property owner. There is no expense to tax payers or ratepayers. Property owners get savings that are greater than costs including the cost of (inaudible). PACE is one of the few ways of reliably financing energy efficiency improvements over the useful life of these improvements in a way that benefits everyone involved in the process.

As you know, we have provided a full set of comments to the EMP and we're happy to provide comments and respond to

any questions. Thank you.

MS. BLUHM: Next up is Will Atkinson. Following Will will be Dave Pringle and then Murray Bevan.

MR. WILL ATKINSON: Good morning, everyone. My name is Will Atkinson, and I'm part of Princeton Student Climate Initiative. So I have some general comments on our group's state-ordered outreach, but first I'd like to remind everyone why we're all here.

Because in the recent months lighthouse states have suffered the impact of climate change firsthand. One friend's home was destroyed by a Washington wildfire, while another's was flooded out by Hurricane Harvey. Here in New Jersey, unchecked sea level rise will have hundreds of thousands of our residents relocated by 2100. So as you see today, we can make a difference, but we have to convince stakeholders.

At Princeton Student Climate Initiative, I've taken this mindset to heart. In the past, we've met with over

80 stakeholders to inform our research on carbon pricing, and we're presenting that research at the first ever international carbon pricing leadership conference in New Delhi, India. We plan to submit our findings to the EMP process.

Tomorrow, Ivan (inaudible) is hosting the State of New Jersey trial pilot policy stakeholder forum. This event will convene over 40 (inaudible) of the first sectors creating state satellite, utilities, distances, and financial views on many that are actually here today.

And to follow on these hearings, this event will actually enable stakeholders to engage in small group discussions, allowing for more advanced policy discourse. We plan to submit our perspectives on topics from RGGI to vote efficiency and submit these to the EMP process as well.

So in sum, we thank you, but we know that this is our future, and we hope to make a difference by providing more

support and input to the process. Thank you very much.

MS. BLUHM: Thank you. Dave Pringle? Then after him will be Murray Bevan and Dennis Hart.

MR. DAVID PRINGLE: Thank you again. My name is David Pringle. I'm here representing Clean Water Action, which is a national environmental advocacy group. We have over 100,000 members in New Jersey. We'll also be submitting more detailed testimony in our comments today.

Reducing consumption obviously makes it a heck of a lot easier, but it's also critical to meeting the governor's clean energy goals by 2050. It's obviously easier to produce less than more, so let's get to that goal.

Done right, it's going to save consumers money, promote environmental justice, protect public health and private property. And when we say consumer savings, we don't just mean individual pocketbook. Industry, for as long as I've been an advocate here in New Jersey for

thirty years, has been screaming about high electricity rates getting in the way of profits and job creation, and it's only -- obviously reducing consumption will save business lots of money, create wonderful opportunities.

With all that said, we respectfully suggest that we need to reclaim the discussion here. The questions raised in the best practice address and the discussion is all very good points, but there is some critical missing points.

Energy efficiency and demand response are important, but conservation is just as, if not even more, important. And too often conservation is overlooked or confused with these two other strategies. They're all critical if we're going to get to where we need to go.

Principally, what's conservation versus demand-response versus energy efficiency? Preservation is how much power do we need, and energy efficiency is how well we produce that power, demand

response is when we produce that power.

And we really need a hierarchy here. We really need to prioritize. I like to use the analogy of -- in our mind, that priority should be number one, and throughout the frame work of the Energy Master Plan should be conservation, followed by energy efficiency, followed by demand response, and then finally clean renewables.

In 2050, that's it. Between now and then we're obviously transitioning, we're ratcheting down on nuclear and fossil fuels, because, as we discussed last Friday, neither of those meet the governor's definition of clean energy. That also includes no new fossil fuel and nuclear energy in the interim. And in doing so, we retire the most dirty and most dangerous plans first.

The hierarchy I like to use as analogy is our solid waste hierarchy. Everybody thinks recycling's great. Well, it is compared to land-filling and incineration, but there's actually three

much better strategies to managing our solid waste than recycling, and that's first and foremost, scorch reduction, followed by reuse, followed by composting. Recycling is actually number four, with land-filling and incineration the last resorts.

I think we need to transfer that kind of thinking from solid waste to energy. At various times we've done a better or worse job in the last 30 years on solid waste in terms of that priority, but we have, generally speaking, done a better job on the solid waste side with that kind of a hierarchy than we have had on the energy side.

So a little repetition and just a couple points to build on what other folks have said. Conservation often gets a bad name, maybe aggravated by a certain president's fireside chat in the 1970s about everybody putting on a sweater and a winter coat, and that's not what we mean by conservation. Individuals obviously have a role to play, but we need to work

correctively with society. Mandatory recycling was a lot more effective than what we did when I was a kid in the '70s, which is, you know, some folks who were motivated picked up the bottles and cans and brought them to the local recycling center.

So we need -- while individuals have their role, individuals tend to control when they turn off a light or how hot their -- what they set their air conditioning and heat at. We really do need this much stronger state-wide across the board...

In terms of pricing those buildings -- building design and building codes, compliance standards, hard grid, obviously it goes without saying we need to get that -- we're not going to get the one and a half billion stolen from the clean energy fund back, but we certainly can make it not worse in the future. Price signals, load spreading all have their role.

I'd like to look at helping folks

understand better what conservation is versus energy efficiency. Conservation is, you know, are the light bulbs on or not; Efficiency is how good is that light bulb.

There is a ton we can be doing in terms of building design and site improvement standards and construction code. How a house is sited on land has a huge impact on how much energy it needs. Whether -- where you -- not just is your roof south facing, are your windows south facing, what kind of trees are around.

Folks don't appreciate the impact trees have on climate adjustment on your house. If your trees are sited correctly, they provide cover and cooling in the summer, and they provide heating by letting the sun through in the winter. The color of your roof, whether you have tiles or carpet at your south-facing windows, how well those tiles absorb or don't absorb heat.

All of those things, obviously people can make individual decisions, but

through the building codes and construction codes and site designs and municipal land use law, the state can have a tremendous role in determining how much power we need in the first place, let alone how we reduce that power.

I think with that -- I think the last main point I want to hit here is environmental justice, just because we need to flag it every single time. Again, not to beat a dead horse, but Friday mornings at ten o'clock in Trenton, we need more diversity in that, we need more outreach.

And all of these policies absolutely fundamentally need to be bent toward environmental justice. Overburdened communities have suffered disproportionately, and we really have to prioritize those communities in the solutions here. Thank you.

MS. BLUHM: Thank you, David. Up now is Murray Bevan, after that will be Dennis Hart and Henry Gajda.

MR. PRINGLE: I need one more

minute. I can't believe I forgot. Absolutely and most importantly we need an energy efficiency portfolio standard that requires a 30 percent reduction below 2015 levels for natural gas and electric usage. And we need clear in our benchmarks between now and 2030 to get us there. Thank you.

MS. BLUHM: Lisa, can Gabrielle --

MS. GABRIELLE FIGUEROA: My name is Gabrielle Figueroa, I work for the law firm of Bevan, Mosca & Giuditta, P.C., and I am testifying today on behalf of the Retail Energy Supply Association. I promise I will be brief.

RESA is a diverse group of retail energy suppliers that offer a variety of electrical and gas products, as well as energy efficiency tools that can help the state achieve its energy efficiency goals.

We do plan on submitting detailed written comments on the topics that are up for discussion today, as well as last week's topics, and I think on some of the other topics we expect to see roll out in

the next couple of weeks.

So in previous iterations of the Energy Master Plan, retail suppliers really did not get a lot of recognition, and this is an opportunity to kind of bring retail suppliers back into the fold a little bit in this current Energy Master Plan process. Suppliers are by and large indifferent to energy efficiency measures, we don't need any of that.

Retail suppliers -- I will say that one of the big things that we want to see is the introduction of Advanced Metering Infrastructures, smart metering technology, AMI. By introducing AMI, you bring literally every single citizen in New Jersey into the -- creating better energy efficiency measures.

Retail suppliers have amazing software and technology that can help consumers better state their energy and you literally hit every single person in New Jersey hard with the state's energy efficiency goals when you give them the smart meter. We know that the Board has

directed the utilities to do cost-benefit analyses, but one thing AMI is going to cost we know that Rockland Electric already has proposed installing AMI. We encourage the Board to move forward with the process.

Suppliers are already equipped to provide clean and energy efficient technology. We encourage the Board to open up clean energy dollars so that suppliers can access this money to better benefit New Jersey ratepayers. Let the market decrease funds. We encourage -- the Board should consider pilot projects where suppliers and other competitive parties can bid for these dollars, and that will help better spread these funds out.

Utilities do a good job with energy efficiency, but they're not always the best providers of energy efficiency. We know that the Clean Energy Act recently passed in May requires the utilities across the board to reduce energy consumption. Retail suppliers can help

get there, and we want to help. We're fine with the utilities getting that credit, but we believe we can be a part of this process. We want to be a part of this process.

I actually don't have anything else, but I appreciate the time. Thank you.

MS. BLUHM: Thank you. Dennis Hart? And Henry Gadja will be up next, and then after that, Jeff Tittel.

MR. DENNIS HART: Good morning, Grace, Sara, everyone on the panel, thank you for the opportunity to speak here this morning. My name is Dennis Hart, I'm the executive director of the Chemistry Council of New Jersey, representing over a hundred firms in New Jersey in the business of chemistry, chemical manufacturing, pharmaceutical manufacturing, and refining industry.

I think the effort that you're undertaking is extremely important to the future of New Jersey for a number of reasons. I submitted to you detailed

testimony, and I'm only very briefly going to go over what I think is the biggest issue that we in manufacturing face in New Jersey.

And you've heard it before, and that's the high cost of energy. In our recent survey of our membership from June and July of 2018, respondents from the 11th consecutive year unanimously ranked energy costs as one of the top issues and concerns facing New Jersey manufacturers. One can understand why, since New Jersey's industrial energy rates are already eighth highest in the country, and on average 45 percent higher than our competing industries around the country. It's difficult for businesses to maintain the operations of New Jersey. For some energy-intensive products, energy for both fuel and power and feed stock represents 85 percent of the cost of manufacturing.

Because energy's a vital component in industry's cost structure, higher energy prices can have a substantial impact on jobs and the bottom line and the

economy of the state. With the implementation of the nuclear credit bill, the green energy bill, and the ongoing rate cases, the cost for energy is just going to continue to go higher, making doing business in New Jersey unsustainable. Because energy represents the largest expense in manufacturing, energy manufacturing -- manufacturing has put a substantial effort into energy efficiency already.

Since the 1970s, energy companies in New Jersey have reduced their energy usage by over 50 percent already and what we hope is that the implementation of any energy efficiency program is not going to result in higher costs to energy, but reducing the energy that we use, but not the cost of energy.

Prior speakers have talked about the raiding of state funds from the clean energy fund and other funds in New Jersey, which is extremely common and unfortunate in our current economy. But unless we deal with the high costs of manufacturing

in this state, the clean energy fund and those energy funds will never be available for their intended purposes. They will continue to be raided as part of the state's economy.

The only way those funds are going to be available is by reducing the costs of doing business, allowing more businesses to move to New Jersey, to expand in New Jersey, then add to those funds, as opposed to those funds being raided for state business.

So thank you for that opportunity, and good luck to all of you. Thank you.

MS. BLUHM: Henry, from the League of Conservation Voters, Jeff Tittle, then we'll have Barbara Blumenthal after that.

MR. HENRY GAJDA: Henry Gajda, New Jersey League of Conservation Voters. I thank you for the opportunity to speak here today. The New Jersey League of Conservation Voters worked very closely with legislators and administration to pass the clean energy bill, which calls for two percent efficiency (inaudible).

Efficiency provides the single widest and most cost-effective opportunity to cut global warming pollution while cleaning the air, creating jobs, and saving businesses money. It costs at least 50 percent less and carries less risk than building power plants, transmission lines, or pipelines.

In 2017, buildings account -- accounted for about 76 percent of electricity that's used and 40 percent of all U.S. primary energy used and associated greenhouse gas emissions.

This is a prime opportunity for improved efficiency, and by 2030 building energy use could be cut by more than 20 percent using technologies (inaudible) today and by more than 35 percent in three years. Research goals aren't met.

There are vast good local job -- there are vast good employment opportunities in energy efficiencies, and as of now more than 33,000 people working in energy efficiency sector comprising of 13 percent of construction jobs, and 25

percent of all energy-related jobs with the New Jersey law. Therefore, making more investment in energy efficiency standards will increase the local job opportunities for all, specifically those who are in New Jersey.

However, in pursuing aggressive energy efficiency targets and meter market value does exist, utilities are not incentivized under the current model to improve energy efficiency, causing the (inaudible) to hit the bottom line. Decoupling turns traditional -- turns the traditional rate market on its head by breaking a link between energy sales and revenue.

Decoupling keeps revenue steady and reduces financial risk and capital costs for the utility and keeps customers' energy costs in check with considerable benefits for low-income households because the money they aren't spending on energy is money that goes directly back in their pockets without being needed for public financial assistance to help pay for their

electricity.

Some low-income households are spending nearly 20 percent of their income on utility bills because they're more likely to have less efficient appliances and systems within their homes, and, therefore, decoupling offers exciting opportunities to promote utility-run energy efficiency programs, (inaudible) home, off-brand rebates, and for the purchase of energy efficiency -- energy efficient appliances and more efficient light bulbs and should be actually explored within this process.

In addition, low-income customers face numerous barriers to participation in efficiency programs. This makes well-designed, specifically targeted efficiency programs for low-income customers a crucial topic to consider doing this.

Therefore, we recommend to BPU to set a goal for energy efficiency delivered to low-income customers. States have taken a variety of approaches in studying

fiscals within programs such as these, like four-year requirements, ten-year requirements, and four-year savings, carve-outs for public programs. Specifically this has been done in Maine and California.

We recommend the BPU to convene a stakeholder group to ensure that programs are well-designed to meet the needs of low- and moderate-income customers, and this ensures that the programs outlined are monitored and evaluated as planned, with the input of the relevant stakeholders who are ultimately going to benefit from these programs.

A utility's energy efficiency program for employers should pursue emerging technologies, provide technical support to upgrade building and appliance efficiency standards, deliver education and workforce training for installation in municipal building code enforcement. They should explore pilot programs, work with key partners like local governments and offer competitive solicitations for

innovation technologies and programs. And ultimately they should encourage demand response initiatives for the public.

Moreover, clean energy funds should stop being raided and used for their -- and solely used for their outlined purposes. The Board should also commission a study to determine, one, the level of a full-cost effective efficiency down to a two percent minimum, including savings from a robust appliance standard building code, recognizing that new appliance standards would require legislation. And then, two, maximum time frame for achieving the level of savings possible hopefully within five years.

Lastly, we recommend the BPU consider forming a stakeholder advisory board, which is similar to Massachusetts and Rhode Island, which would include expert consultants, who would support utilities' efforts to adopt best practices, help ensure transparency, and provide validation for program performance and any other experimental programs that

utilities would deem fit.

Thank you for your time.

MS. BLUHM: Thank you. Jeff Tittel, then Barbara Blumenthal and David Hughes.

MR. JEFF TITTEL: Thank you. And I want to thank the BPU for having this hearing and revisit the Energy Master Plan, especially when it comes to dealing with energy efficiency.

The Sierra Club, as the nation's oldest and largest conservation group, understands more than anything else that the best way to protect the environment, reduce greenhouse gases, and save people money is through conservation and emissions. That's what it's about, and that's what we're about.

Because more than anything else, we can help businesses in this state grow jobs through energy efficiency, we can save money for ratepayers in our companies, and we have some of the highest costs in the nation. And up until now, all we've been doing in energy efficiency

has been hot air because we have turned these clean energy funds into the slush fund for the state legislature and for governors, where we've seen that money being grabbed for everything from licensed building to paying for park salaries so some conservation groups can get more money.

We've turned this thing on its head, and because we have done that, New Jersey spends more per energy efficiency than any other state in this region and gets the least return, and that is shameful.

And that's why today is important. We have this new administration and a new BPU, and we need to send a message also to this building to stop raiding those funds, whether it's the treasurer, senate president, the head of the budget committee. Hands off. Because they have taken $1.6 billion out of this fund, almost consistently of $140 million a year, that has cost us 4,000 jobs per year over the last ten years -- or nine years.

That is unconscionable.

We work very closely with the laborers union at SCIU to train people here in Trenton and in Paterson and Camden to do work for HVAC systems and weatherization and energy efficiency. We've trained these young people, they're expecting jobs. When that money got raided, those jobs disappeared, and they didn't get those jobs. And HVAC companies have laid off people and everything else because Princeton, who I've used for my house, had to get rid of four crews. That's unconscionable in a state that needs those kind of jobs, in a state that has some of the worst air pollution in the country.

Energy efficiency is critical because it lowers the peak demand, which is the dirtiest and most expensive fuels out there -- polluting fuels out there. It helps us during times of those cold snaps in the winter, again, where we get the dirty fuels and high expensive fuels. Energy efficiency reduces it.

We have such an untapped reserve for both jobs and for our economy by really grabbing ahold of energy efficiency. The average home in New Jersey, which was built in the '60s and '70s, by adding new windows, buying new fuel-efficient appliances -- energy efficient appliances -- better weatherization, putting in LED light bulbs, getting rid of the instant-on, the always-on TVs and cable boxes, you would reduce energy usage by 30 percent in the average home. Think about that. How many fewer pipelines and power plants would we need if we did that?

That's the other critical point. We'll never get to 100 percent renewable energy unless we reduce the amount of energy we need. If we bring our energy use down by 20 percent in this state, well, that means not only don't we have to build power plants in the meadowlands, but more importantly, it means that we can get to the 30 percent that we want to get to, also it could be 40 percent. That's why

it's critical.

Same thing with solar. If people in the business community complain about some of the higher costs of renewable energy, especially solar, pair that with energy efficiency, the amount of solar we'll need to get to 100 percent renewable will be less and cost ratepayers less. So it has an overwhelming benefit to the economy

And so we're here today to say, that we need to move forward in energy efficiency. Eight years ago, ten years ago New Jersey was seventh in the nation in energy efficiency. We're now 22 to 24th depending on which study. That is so wrong in a state like New Jersey. It doesn't make any sense when other states like Pennsylvania, Maryland, Delaware, Massachusetts are doing a better job than we are. Because we have some of the highest energy costs and because we haven't worked on energy efficiency the way we should, that's one of the reasons for those higher costs, as long as we do

subsidies and other stupid things.

The important point that I want to get to is what we need to do. We need to start changing things. We need to adopt the International Green Building Code into our building codes. We need to take the LEED standards and also put them in our building codes. We need to move the Energy Star system from being voluntary for level three to be mandatory for level three. We need to make sure that every state building and any building being funded by the state government or indirectly through tax and current financing as a LEED state, we plan and build them.

We need to move forward on upgrading our grid to look at DC current for long transmission, to make our substations more energy efficient, to use battery back-up and other things with them to reduce the amount of loss that we get off of our transmission lines.

We need to go out and actually have real rebates and let people know

there is a program out there. When I went out shopping for a new furnace, one of the companies in New Jersey said, oh, the BPU doesn't do it anymore. And I pressed them on it, plus I called Joe Fiordaliso and said, here, talk to Joe. We do have that program. He said, oh, I don't want to do the paperwork.

We used to -- we have to make sure that we're telling vendors in this state that are working on this issue that they have to promote the most cleanest and highest best use technology when it comes to appliances and energy technology.

When I was shopping, I noticed we don't see the big signs about rebates anymore where you go to PC Richards and you buy the Energy Star, energy efficient, you'd get a rebate. We used to do that, we used to mail things to people. We need to get out there and educate the public that there are programs out there.

Because the other thing is, the more the public sees it can get a benefit from rebates, the harder it'll be for

governors and legislatures to steal that money. And that's why it's critical. We cannot move the state board environmentally without it.

We also need to make sure that we go back into RGGI. When we go back into RGGI, that that money is dedicated to energy efficiency and targeted at low- and moderate-income families. We don't need to spend that money on planting butterfly bushes in the middle of an island. We need to make sure that we can reduce peak demand and air pollution in our cities based on energy efficiency.

If we invested in energy efficiency in our cities, some of those gaudy power plants will disappear. But more importantly it is the biggest and best compliment we have to renewable energy to get us to our goals.

So we're here today to say that we need to make sure that the BPU moves forward, moves forward quickly and aggressively, in reducing energy use by at least two percent, not including in

Trenton. Because right now in Trenton, New Jersey, we're reducing energy use by a little bit less than a point per year -- percentage point per year. And that we need to get to at least a 30 percent reduction by 2020.

We need to also tie this all together in one package. Not only land use and transit villages, but green buildings, more walkable communities, green roofs, blue roofs, better and higher use of materials that are more energy efficient, and also repurposing materials instead of using new materials.

And so we put it all together in a package with land use, with energy efficiency, with building codes, with renewable energy, distributed generation. We can really move this state forward and make it sustainable and help protect us, not only environmentally, but also help protect our economy.

Thank you, and I am glad this is going forward and glad to work with you more. This is important. Thanks.

MS. BLUHM: Thank you, Jeff. Next up is Barbara Blumenthal, then David Hughes, and then Jeffrey Grant. Barbara, are you here?

(No response.)

So we'll move on to David Hughes.

(No response.)

Jeffrey Grant?

MR. JEFFREY GRANT: Hi. Good morning. Thank you for having this opportunity. I'm Jeffrey Grant. I am with the Mack-Cali Realty Corporation --

MR. AUSTIN: Want to turn on your microphone?

MS. BLUHM: You have to press the button.

MR. JEFFREY GRANT: All right. We'll start again. Good afternoon. Thank you for having this opportunity for us to contribute to this plan. My name is Jeffrey Grant. I oversee the corporate energy program at Mack-Cali Realty Corporation. Mack-Cali is a publicly traded real estate investment trust company. We own primarily commercial

office buildings, and we have a division called Roseland Property Group, which owns multi-family residential buildings as well.

I'm going to talk generally about the plan as it relates to existing buildings. There is, of course, a huge stock of existing buildings in New Jersey. My role at Mack-Cali has been in making them more efficient with the tenure I have at Mack-Cali.

I want to first compliment -- well, my credentials are, I'm a mechanical engineer, I'm a certified energy manager, I'm a certified energy procurement professional. I've been in the energy business ever since I graduated college many, many years ago.

So a couple of comments on the general nature of things. A few have already talked about. One comment I heard from Mr. DeFeo was, the best kilowatt hour is the kilowatt hour not used. Tittel, who I've never heard him say this before, but I appreciate the comment, He talked

about the importance of reduced kW capacity.

So I combined those two statements and say, look, the most valuable kilowatt hour is the one not consumed and the most valuable kilowatt is the one not called upon to operate. So in our world, we have been able to become more efficient when applying the large energy user program and Clean Energy Use program. And one of the biggest parts of program is the user is able to self-direct capital to its highest and best use. And the benefit is a 33-cent kilowatt hour incentive the first year of energy savings.

I want to compare that for a moment to the solar energy program where my electric program pays right now, it's about 22 cents kilowatt hour for energy saved, energy generated rather, for year after year after year.

If we compare the two programs and you look at something called the duck curve -- if you don't know what the duck curve is, you can Google it. But in a

short explanation is it's in a grid with solar renewable energy. The grid peak doesn't decline for quite a while after the solar energy production declines, and during that period you have a scramble of low efficiency/high operating cost generators that could be activated to take care of the sudden drop in the varying capacity cost by the solar systems.

So when that happens, we see capacity costs driving up, we see energy costs driving up. And my point is that in energy efficiency programs let's not just look at incentivizing kilowatt hour savings, in this case the large energy user program at 33 cents a kilowatt hour, but let's also look at incentivizing a capacity reduction that is also achieved. And that capacity reduction can be just as, if not equally, important.

The capacity reduction in most energy efficiency projects we have done is significant and applies almost across the board to all of our projects. Some don't have capacity reductions, most do.

So my bottom line point is to reconsider good energy programs with purposefully incentivizing efficiency and also incentivize kW capacity reduction. And I thank you very much for your time.

MS. BLUHM: Thank you, Jeffrey.

Mark Thomas. And following Mark will be Robert DiDomenico and then Amy Henson. Is Mark here?

(No response.)

Okay. Robert DiDomenico?

(No response.)

Amy Henson?

After that, I have Sally Gellert, Gaylord Olson, and Judd Schweigel. Is Sally here?

(No response.)

Gaylord Olson?

MR. GAYLORD OLSON: Hello. My name is Gaylord Olson. I'm a semi-retired engineer. I'm on the Industrial Advisory Committee for Engineering at Temple University. I'm working with a few other engineers on kind of an informal basis to look into perhaps more efficient and

cost-effective heat pump methods.

I'd like to make two major points today. And one might seem kind of controversial, but I'll try to explain it and have it make sense. And that is, we've heard the phrase once or twice today, net zero buildings. So a net zero building is assumed to be a building that has solar panels on the roof to give enough electricity on an annual basis supply electrical energy needed for the building. And basically the grid would be used as a -- kind of a -- well, for storage for that situation.

Now, thinking about that, I believe that it's not the right thing to do, and I'll explain. There's a vast difference in cost effectiveness of solar electricity for small scale versus large scale.

Now, today we have the new possibility of getting into community solar, which would be a large-scale array -- utility scale -- out in a big open field. And so it turns out that if

you consider the small roof-top solar cost, one cycle cost, of energy, that is kilowatt hours per year, it's about 2.8 times more expensive to have the smaller array giving you your electricity, as compared to a large array on a big open field.

And this comparison is done periodically by people at the National Renewable Energy Laboratory in Colorado, which is run by the Department of Energy, so it's a pretty valid source.

So think about that. It costs you 2.8 times more to get electricity from your roof as compared to the largest possible array that we could put out on an open field that's maybe 100 miles from your home.

Now, transferring electricity 100 miles is pretty trivial in terms of cost. If you want to transfer it 1000 miles, even that can be done, But it becomes more expensive the further you go. But if you think about a radius of 100 miles around anybody's home here, there are plenty of

open fields and perhaps a ground that's not suitable very well for agricultural use.

So I would encourage everyone to think about this difference, that is giving people the opportunity -- and this would be open to anybody and everybody in the state the way the community solar program is intended to work. So we wouldn't be excluding anybody, I hope.

So -- and there are two other factors that come in when you consider the smallest rooftops on individual homes. If a home has the possibility of having trees around the home, then when the trees get tall enough, there'd be some shade from the trees to give a lower air conditioning bill for the home, so you're saving electricity, reducing consumption, with lower air conditioning.

A third factor that can be considered for this is that people that study real estate values find that homes with large trees are worth significantly more than homes without the large trees.

And so there's a choice -- I think -- it makes sense to me, and I hope it does to everybody here, that people should get their solar electricity from large arrays away from their home and keep -- if they can possibly do it, keep trees around their home. That was one of the major points I wanted to bring out today as food for thought.

The other major point is that there are more efficient ways of heating and cooling buildings that are being developed right now in Europe that are not available or being developed in this country. So we can learn quite a lot from looking at the best ideas coming from countries like Germany and some of the Scandinavian countries.

And I'll give you one example, which is something that a few other engineers and I are currently working on, and that is regarding heat pumps. A heat pump is certainly a more efficient way of getting heating and cooling in a building with only electricity being used as

compared to, for example, clay resistive heating in a building.

So people usually think that geothermal-type heat pumps are the most cost effective -- I shouldn't say it that way, but the least energy intensive way of getting heating and cooling in a building. That is not only true in general -- and the reason that these kind of systems are not used more widely is that the initial cost is too high.

Now, the State of New York is looking seriously into getting significant economic benefits to people that put in geothermal heat pump systems for their homes. What I think is possible, is to -- well, I should also add, there's a much wider and more widely used type of heat pump, which is an air source heat pump.

And people usually think that you have to make a choice, do you want to buy a less expensive air-source heat pump, which is less efficient on the hottest and coldest days of the year, or do you want to pay more money and have a geothermal

heat pump, which is efficient regardless of the outdoor temperature, but it had a higher initial cost.

Now, it turns out that there's at least one company in Germany right now installing a system that provides the best benefits of both of these types of heat pumps. It would be called a multi-source or hybrid heat pump. And anyone wants to look it up, the name is ThermSelect, and I believe their website is thermselect.de. It's only available in Europe, and another one of my associates and I are looking into whether it's possible to bring that technology into this country, but there are some other ways to do a very similar function, which, again, I believe might end up being the most cost-effective way to provide electrical heating and cooling for buildings.

So thank you for your time, and I hope all of these good ideas that are coming out can be put into effect. Thank you.

MS. BLUHM: Thank you. Judd

Schweigel (ph). And then following him would be Rey Montalvo, Andy Corn, and Robert McCoy.

MR. JUDD SCHWEIGEL: Good afternoon, and thank you to the members of the committee for the opportunity to address you today and to provide comments. My name is Judd Schweigel and I represent Schneider Electric, a large industrial company -- global company with facilities in New Jersey, including one large plant with over 500 employees that we recently acquired in northern New Jersey. So I'm here to speak from the perspective of an industrial customer.

I am a consultant to Schneider Electric and several other large industrials who are in favor of energy efficiency, including in favor of energy efficiency programs and policies. Energy efficiency is important to Schneider Electric and other large customers in several ways.

First, as industrials and as large energy users, energy efficiency helps us

to manage and to reduce our energy costs as well as to meet our sustainability goals.

Second, we provide services and profits to our customers. We work in power management and energy management, not just efficiency, but with things like switches and controls, we own Square D circuit breakers. So all of our other customers -- energy efficiency helps to reduce their costs and increase their competitiveness as well.

And then third, our supply chain, businesses who supply us, energy efficiency helps reduce all of their costs, which helps reduce our costs, and make both them and us competitive. We are, again, a global business -- global, international company.

In particular, we have very ambitions sustainability goals, and those goals apply to us, or they apply throughout our entire supply chain. We need to not only meet the standards that we've set for ourselves in our own plants,

but we require those standards and those goals to be met by all the supply chains businesses, and we rely on energy efficiencies to help to get us there.

So why are energy efficiency policies and programs important to large businesses? It basically comes down to the value of the technical assistance and the financial incentives. Some often ask if energy efficiency is so good and if it's so cost effective, why does a large multi-billion dollar company like you need that, why do you support energy efficiency programs, and why don't you and your suppliers need energy efficiency services and financial incentives?

And it basically comes down to this: Within our reality is -- we are competing against many others globally. There's intense competition for resources and capital within our businesses. We all have made the investments in the low-hanging fruit things that have a one-year payback or a one-and-a-half year payback or a 100 percent rate of return,

or internal rate of return.

However, most of the potential in things like industrial process or in manufacturing, most of that potential now remaining has payback periods of two to eight years. And if I'm going to face the CFO -- Schneider's CFO or any other CFO, and I bring them a project that has a 50 percent rate of return or a 30 percent rate of return, which all of us would take -- many of us would take, That project is not going to be funded against the investments that they make in R&D and other areas that basically get funded.

So what happens in the utility industry is, utilities go out and they -- and other private industry suppliers go out and buy resources on our behalf that cost two, three, four times more than the energy efficiency in our plant, and then we're forced to pay for those investments year after year after year because of the way they're capitalized.

Yes, we have energy efficiency that we could do in our plants. That

doesn't mean our internal cost -- the requirements, our investment criteria, but far surpass investment criteria for us as a New Jersey customer and all other New Jersey customers.

So the cost of energy efficiency is a very high priority for us and strong programs with high levels of investment and quality services delivered to customers, those are the things we need to be able to compete. We have multi-year projects, so we need the flexibility to design a project in 2018 that may not be implemented until 2020 and 2021, so it's important for us to have both market and regulatory certainty.

Policies such as plans -- a plan that you all are working on -- but also state policies, such as appliance standards or resource standards, we have found to be very effective in other states to allow our planners to develop investments, design investments, and then to be able to have the confidence to follow through with those investments

because we can be sure that when working with the program suppliers, that those products can actually be done. Plus, the commitment of the financial incentives are going to be available three years from now, not just immediately. So that's important to us.

So we support these programs that provide value to customers and that meet customer need. We encourage the program supplier to take into account the unique situations of industrial customers and to meet us, the needs that we have. We like system approaches that are -- include, but are not necessarily limited to, industrial process, new construction, controls for lighting and HVAC. These are areas where new technologies and advancements in automation, something that we are a global leader in, these new technologies and automations can provide new opportunities for energy efficiency.

We also support small business programs and mid-size business programs, again, that help our supply chain deliver

cost savings to us and help meet our sustainability goals. And we support performance contracting for schools, governments, municipalities, and others, hospitals, for example, healthcare facilities, that can help businesses meet high levels of energy efficiency and help, again, provide that technical assistance and the financial assistance as well.

In addition to energy efficiency and reducing energy costs, we support work and coordination of the energy efficiency activities with activities for micro grids, for grid modification, for electrification, which is going to be very important for New Jersey to meet its overall climate goals as well as its energy efficiency goals. And we support energy efficiency in transportation.

So with that, again, thank you for the opportunity, and I encourage you to consider the use of industrial customers in your developmental plan. Thank you.

MS. BLUHM: Thank you very much. Rey Montalvo followed by Andy Corn, Robert

McCoy, and then Debra Coyle.

MR. REY MONTALVO: My name is Rey Montalvo. I'm president and CEO of Consolidated Energy Design. I've been in the energy business for 44 years, and because everybody's hungry and because we only have 10 minutes, I'm going to get right down to what does concern me over these past 44 years.

When we look at utility bills, there's two components, kW and kWh. But for some reason here in New Jersey we only pay attention to part of that energy bill, we pay attention to the kWh. That's what we incentivize people for, tut we never incentivize people for the kW and reduction, and that represents anywhere from 30 to 40 percent of the bill. So if we really want to help people of New Jersey, we need to reward people for reducing the energy demand.

Now, the Board of Public Utilities has been doing an admirable job, especially with programs over the last 35 years, such as paying for performance, and

the new customer tailored energy efficiency. But now we need to have a major paradigm shift as Governor Murphy has envisioned. California's been doing this for a long time. New York has already embarked on their journey toward a fundamental energy change with their mandate called REV, Reforming Energy Vision.

These states understand, and New Jersey needs to understand, that incentives must be made to encourage kW reduction, not just incentives for kWh, which has and continues to be the case.

We ask that the Board incentivize fully automated demand enablement because the peak a.m. money that we see for demand response is simply not significant enough to encourage building owners to want to pay for a demand enablement. But by having a demand enablement from the Board through the clean energy program, we can encourage many, many thousands of businesses to do this and this is going to help New Jersey.

Currently, pkW reduction must be more than just something that we recognize. Gee, that's really great, you guys billed that much kW. No incentive. Instead, it must be incentivized for people to want to do it, for people to be able to afford to do it, because it's a lot easier to drop kWh than it is to drop kW.

Now, this has become even more critical as we consider the fact that we want to move into electric vehicles. And we want to move into heating and cooling, which was discussed today, such as heat pumps. Those things are going to increase the stable kW demand capacity that we need, and if we don't address reducing kW reduction now, we will not be able to achieve these goals later.

So where a company by energy storage will help out, but we need destructive new tech -- innovative technology to actually accomplish this. Governor Murphy has clearly seen that new destructive innovation is critical tot

only in this area, but to increase jobs with decent wages and decent benefits to help New Jersey get out of the financial crisis it finds itself in.

The Board needs to incentivize kW demand reduction. They need to incentivize kW demand enablement or else that destruction's not going to happen, and they need to incentivize disruptive energy innovation, because only then will we achieve our future electric vehicle and clean energy goals and actually start saving significant money on our total electric bill, not just part of it.

Thanks for giving me your time.

MS. BLUHM: Thank you very much. Andy Corn. Andy, going once? Going twice?

(No response.)

Robert McCoy.

MR. ROBERT McCOY: I'll put my comments in writing.

MS. BLUHM: Okay. Great. Thank you. Robert McCoy? Oh, sorry, yes. Okay. Wasn't sure if you were Andy or

Robert.

Debra Coyle? And Debra is the last speaker that signed up. If anyone else wishes to speak, then if you could do me a favor and just pass your card up here so I can read your name into the record. And, if not, then, Debra, you are in between us and lunch.

MS. DEBRA COYLE: I am going to also submit comments. I will be like 60 seconds because they look very hungry.

So my name is Debra Coyle. I'm the acting executive director of the New Jersey Work Environment Council and we're partnered in Jersey Renews. And, like I said, I will submit written comments, but a couple of just very quick points.

When we talk about energy efficiency, particularly in manufacturing, the high cost of energy in the state and it is an issue, one thing I would like to be considered is New Jersey should support policies and measures that expand use of industrial energy efficiency technologies that will serve to reduce greenhouse gas

emissions, maximize efficiency, reduce waste, and help industrial facilities to be more competitive nationally and globally.

We'd also like to see improving energy efficiency savings and requiring a 30 percent reduction below 2015 levels for electric and natural gas use in New Jersey.

And in my written comments I will also spew more detail, but I would also like to bring up the green building standards for newly existing construction and examining and updating building on-load and efficiency codes and requirements; and, finally, establishing an energy data transparency.

The New Jersey Board of Public Utilities could give building owners and managers electronic access to monthly whole building aggregate energy consumption data with reasonable aggregate energy protections for tenants being able to meet and verify energy reduction critical.

And as many people have mentioned today, I think an important step is also to stop raiding the clean energy fund. And I'll stop there. Thank you very much for your time.

MS. BLUHM: Thank you. And thank you everyone for participating today. Again, I just want to do another open call in case there's anybody who has any comments they'd like to share with us. Feel free to come up to the mic.

Otherwise, that will conclude our stakeholder meeting for reducing energy consumption. We appreciate all of your comments and feedback. The committee will be deliberating, as Grace mentioned, and we'll be reviewing all of your comments on this.

If you are going to write written comments and have not yet submitted them, please remember they are due by October 12th to emp.comments@bpu.nj.gov, which is on the screen. It's also in the notice and the discussion point that are on the table in the room.

This is not your only opportunity to comment. After the draft plan comes out, as Grace mentioned, we will then have public stakeholder meetings and have the draft plan be open to comments as well, too.

If you're looking to participate in our other meetings, we still have three stakeholder meetings coming up. The next one is next Thursday here in the State House on Clean and Reliable Transportation, then on September 24th, Building a Modern Grid, and on September 28th, Sustainable and Resilient Infrastructure.

Thank you all for coming out. Have a good day.

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(The proceedings adjourned at 12:45 p.m.)

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C E R T I F I C A T E

STATE OF NEW JERSEY)
) ss.
COUNTY OF BURLINGTON)

I, LAURA P. REAM, a Shorthand (Stenotype) Reporter and Notary Public of the State of New Jersey, do hereby certify that the foregoing hearing, taken at the time and place aforesaid, is a true and correct transcription of said deposition.

I further certify that I am neither counsel for nor related to any party to said action, nor in any way interested in the result of outcome thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this 3rd day of October, 2018.

Laura P. Ream

LAURA P. REAM

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